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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/774,627

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Shigemichi Hamano

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10/25/2006

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EXAMINER

WRIGHT, KAINOA

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 10/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/774,627

Applicant(s)

HAMANO ET AL.

Examiner

Kainoa BK Wright

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-5,7,8,10-15,17,18 and 20 is/are rejected.
- 7) ☒ Claim(s) 6 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicants amendments regarding claims 1, 2, 5, 6, 7, 9, 11, 12, 15, 16 and 19 are acknowledged.

### ***Response to Arguments***

2. Acknowledgement is made regarding perfection of priority overcoming rejections based on Yamada (US 2004/0184827).
3. Applicant's arguments with respect to claims 1 & 11 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 11 & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchiwaki et al. (US 6263174) in view of Tominaga (JP 10020614).

Regarding Claims 1 & 2: Fuchiwaki et al. teaches a rotatively driven image carrier 20; a primary transfer device 11; a secondary transfer device 40 transferring an image from the image carrier to a recording medium; and a controller 3 comprising a reference signal change circuit 5 for changing between reference signals utilized for identifying writing positions on the intermediate transfer belt (col.3, ll.32-38). Fuchiwaki

et al. further teaches the controller issuing a plurality of reference signals (col.4, ll.33-49) and selecting one of the reference signals to be used as a reference signal to be used to identify an image writing position. Fuchiwaki et al. further teaches a reference signal to be issued based on a detection of a reference position on the image carrier (Fig.5). Fuchiwaki et al. further teaches a reference position detecting device 92 and a marking 911 (Fig.5). Fuchiwaki et al. still further teaches determining a first color reference positioning with respect to a reference position and then to determine a next color reference positioning with respect to the reference position redetected (Fig.12).

Fuchiwaki et al. fails to teach a reference signal based on a circumference which is detected in advance.

Tominaga teaches an image formation apparatus comprising a measurement means to measure the time amount of one revolution (i.e. circumference) of an imprint object 4 (i.e. an intermediate transfer member); and a generation means to generate a timing signal which shows the timing which starts formation of a latent image based on the measurement result obtained by the measurement means (Claim 1). Tominaga further teaches the measurement being carried out before the initiation of image formation (Claim4). Tominaga further teaches electrically generating a top signal (i.e. an image write start signal) based on a timing of one rotation of the intermediate transfer member ([0032]-[0033]) such that a top signal for a first color is generated, then at a time corresponding to one rotation of the intermediate transfer member, a top signal for a next color is generated (Fig.2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the image registration system of Fuchiwaki et al. wherein a controller is able to switch between a plurality of registration signals, to include the registration signal generating means of Tominaga, wherein a registration signal is generated according to a pre-measured time of one rotation of an image transfer member, in order to provide for an image registration system which more accurately aligns subsequent colors in a color printer having an unevenness of the rotational speed of the intermediate transfer member.

Regarding Claim 11: The methods of claim 11 follow the functionality of the devices of claim 1 such that the operation of the devices of claim 1 produce the steps corresponding to claim 11, and as such the arguments presented against claim 1 are valid for claim 11.

Regarding Claim 12: The methods of claim 12 follow the functionality of the devices of claim 2 such that the operation of the devices of claim 2 produce the steps corresponding to claim 12, and as such the arguments presented against claim 2 are valid for claim 12.

6. Claims 3-5, 7, 13-15, & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchiwaki et al. (US 6263174) in view of Tominaga (JP 10020614) as applied to claims 2 & 12 above, and further in view of Nozaki (US 6275281).

Regarding Claim 3: Fuchiwaki et al. in view of Tominaga teach an image registration apparatus operable to switch between registration signals based on a

detected position of an intermediate transfer member and registration signals based on a premeasured circumference of the intermediate transfer member. Tominaga further teaches a reference clock generator 13 which generates a reference clock signal which is counted to measure the circumference of the intermediate transfer member ([0032]-[0033]). Further it is implied that the time interval corresponding to the circumference is stored in a storage device, because the time interval is reused without further calculation and therefore must be stored in a storage to be recalled at need. Tominaga further teaches that it is preferable to have the time amount corresponding to the circumference of the intermediate transfer member to be measured in time amounts corresponding to a horizontal scanning of one line (i.e. a line count) in order to increase accuracy ([0033]).

Although Tominaga teaches measuring a circumference in units of scanning lines, Fuchiwaki et al. in view of Tominaga fails to explicitly teach a line number counting device that counts a number of lines with reference to a beam detect signal period.

Nozaki teaches a "line number counting device" as a line number counter 502 that counts a number of lines with reference to a beam detect signal.

It would have been obvious to one of ordinary skill in the art at the time of the invention, to include within Fuchiwaki et al. in view of Tominaga, a line number counter as taught by Nozaki, in order to have a line count value by which to synchronize beam write timing with a write position reference signal and thereby match the write positions of various colors, as is suggested by the abstract of Nozaki.

Regarding Claim 4: Nozaki further teaches a clock period being less than a line period as suggested by column 13, lines 50-55 of Nozaki. Nozaki specifically discloses a beam period defined by a count number of a free-run counter, a free-run counter by definition providing a clock pulse, the period of the counter being less than that of the beam period.

It would have been obvious to one of ordinary skill in the art at the time of the invention, to incorporate within Fuchiwaki et al. in view of Tominaga, a clock period less than a beam period in order to define a beam period by a count number as shown in Nozaki.

Regarding Claims 5 & 7: Tominaga teaches measuring a circumference by a reference clock, implying a units of reference clock pulse. Tominaga further teaches measuring a circumference in units of line scanning times in order to increase accuracy. It is therefore implied within Tominaga to provide a means of converting a measured circumference from reference clock units to scan line units in order to increase accuracy. It is therefore further implied that, since Tominaga provides for determining a circumference in terms of a beam scanning and issuing a reference signal based on the measured circumference, Tominaga also teaches determining the write timing reference signal based on a number of scanning lines corresponding to a circumference. Further it is implied that the time interval corresponding to the circumference is stored in a storage device, because the time interval is reused without further calculation and therefore must be in stored in a storage to be recalled at need.

Regarding Claim 13: The methods of claim 13 follow the functionality of the devices of claim 3 such that the operation of the devices of claim 3 produce the steps corresponding to claim 13, and as such the arguments presented against claim 3 are valid for claim 13.

Regarding Claim 14: The methods of claim 14 follow the functionality of the devices of claim 4 such that the operation of the devices of claim 4 produce the steps corresponding to claim 14, and as such the arguments presented against claim 3 are valid for claim 14.

Regarding Claim 15: The methods of claim 15 follow the functionality of the devices of claim 5 such that the operation of the devices of claim 5 produce the steps corresponding to claim 15, and as such the arguments presented against claim 5 are valid for claim 15.

Regarding Claim 17: The methods of claim 17 follow the functionality of the devices of claim 7 such that the operation of the devices of claim 7 produce the steps corresponding to claim 17, and as such the arguments presented against claim 7 are valid for claim 17.

7. Claims 8 & 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchiwaki et al. (US 6263174) in view of Tominaga (JP 10020614) and further in view of Nozaki (US 6275281) as applied to claims 3 & 13 above, and further in view of Morita (US 6788322).



Regarding Claim 8: Fuchiwaki et al. in view of Tominaga and further in view of Nozaki teaches an image registration apparatus which issues registration signals in accordance with a pre-determined circumference as measured in line scan timings whose period is less than that of a reference clock.

Fuchiwaki et al. in view of Tominaga and further in view of Nozaki fails to teach a sheet feed timing based on a time interval counted in line scan timings.

Morita discloses a predetermined sheet feed timing for supplying a recording medium from an upstream standby position at a predetermined timing, the timing relating to the distance L1 of travel from a standby position to a contact image sensor 204 acting as a detector for the issuing of an image writing timing signal, as shown in Figure 3.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Fuchiwaki et al. in view of Tominaga and further in view of Nozaki in order to provide for a sheet feeding timing as disclosed by Morita and as suggested by Fuchiwaki et al. (column 8, lines 20-35) as a paper feeding system wherein paper is "temporarily positioned and stopped". Further obvious is the duration of time extending from the issuance of the final color image writing signal until the re-conveyance of a recording medium from a standby position. It is examiners understanding that this functions as a countdown of time until a new page is to be started. Although not explicitly stated in the references, it is understood that a delay of a medium from a standby position has the inherent function of being able to wait until the previous page is complete before being fed into the image forming area.

Regarding Claim 18: The methods of claim 18 follow the functionality of the devices of claim 8 such that the operation of the devices of claim 8 produce the steps corresponding to claim 18, and as such the arguments presented against claim 8 are valid for claim 18.

8. Claims 10 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchiwaki et al. (US 6263174) in view of Tominaga (JP 10020614) as applied to claims 2 & 20 above, and further in view of Toyoda (US 2003/0095173).

Regarding Claim 10: Fuchiwaki et al. in view of Tominaga teach an image forming apparatus operable to switch between registration signals based on a detected position of an intermediate transfer member and registration signals based on a premeasured circumference of the intermediate transfer member.

Fuchiwaki et al. in view of Tominaga fail to teach an image forming apparatus being a type selected from a group consisting of a copying machine, a printer, and a multifunction machine.

Toyoda teaches color registration to be carried out in image forming apparatus's of the type selected from a group consisting of a copying machine, a printer, and a multifunction machine ([0002])

It would have been obvious to one of ordinary skill in the art to modify Fuchiwaki et al. in view of Tominaga to be useable in copiers, printers, and multifunction devices as taught by Toyoda in order to provide the image registration advantages of Fuchiwaki et al. in view of Tominaga in similar machines.

Regarding Claim 20: The methods of claim 20 follow the functionality of the devices of claim 10 such that the operation of the devices of claim 10 produce the steps corresponding to claim 20, and as such the arguments presented for claim 10 are valid for claim 20.

***Allowable Subject Matter***

9. Claims 6 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding Claim 6: the merits of claim 6 are considered to be allowable because the limitations of the claim as they apply to the art of image forming devices are such that examiner is unable to produce prior art that would preclude patentability.

Specifically, examiner believes that the adjustment of an integer portion of a conversion result with respect to a decimal portion of the conversion result; the conversion result depending from a unit conversion of a count value; the count value being of a length measurement of a transfer belt; is previously unknown in the art of image forming devices.

Regarding Claim 16: The methods of claim 16 follow the functionality of the devices of claim 6 such that the operation of the devices of claim 6 produce the steps corresponding to claim 16, and as such the arguments presented for claim 6 are valid for claim 16.

10. Claims 9 & 19 are allowed.

Regarding Claim 9: The allowable features of this claim include the selection of an image writing reference signal (or mode of producing an image writing reference signal) based on a change or lack of change in the processing speed at which the image formation takes place. Tominaga shows that it is known in the art to provide for an uneven process speed by issuing registration signals according to a circumference measurement; however, examiner believes that the patentable feature of the present invention relies on the fact that the present invention responds to a change in the process speed by switching signals to one which accounts for the changing speed.

Regarding Claim 19: The methods of claim 19 follow the functionality of the devices of claim 9 such that the operation of the devices of claim 9 produce the steps corresponding to claim 19, and as such the arguments presented against claim 9 are valid for claim 19.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kainoa BK Wright whose telephone number is (571) 272-5102. The examiner can normally be reached on M-F 8:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAI

10/20/2006

*Hai Pham*

HAI PHAM  
PRIMARY EXAMINER